

DEPARTMENT OF ENERGY METAL CASTING
COMPETITIVENESS RESEARCH ACT OF 1990

MARCH 28 (legislative day, JANUARY 23), 1990.—Ordered to be printed

Mr. JOHNSTON, from the Committee on Energy and Natural
Resources, submitted the following

REPORT

[To accompany H.R. 1243]

The Committee on Energy and Natural Resources to which was referred the Act (H.R. 1243) to require the Secretary of Energy to establish three Centers for Metal Casting Competitiveness Research, having considered the same, reports favorably thereon with an amendment and recommends that the Act, as amended, do pass.

The amendment is as follows:

Strike out all after the enacting clause and insert in lieu thereof the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the "Department of Energy Metal Casting Competitiveness Research Act of 1990".

SEC. 2. FINDINGS.

The Congress finds that—

- (1) metal casting is an important process for manufacturing many items imported into or exported from the United States;
- (2) the encouragement and maintenance of a technically advanced United States metal casting industry is essential to the competitiveness of many American industries;
- (3) maintaining a viable metal casting industry is vital to the national security and economic well-being of the United States;
- (4) the promotion of technology competitiveness and energy efficiency in the United States metal casting industry by the Federal Government is necessary to maintain a viable metal casting industry;
- (5) many metal casting companies lack the resources to conduct metal casting research alone, placing them at a serious competitive disadvantage;
- (6) the support of university-based research in metal casting is important in promoting technology development and providing industry with qualified engineers; and

(7) by combining the resources of the Federal Government, universities, industry, and private organizations, to conduct research and development activities, substantial technological benefits will result to the metal casting industry.

SEC. 3. DEFINITIONS.

As used in this Act, the term—

- (1) "applicant" means:
 - (A) an education institution;
 - (B) a consortium of educational institutions;
 - (C) a consortium of an educational institution or educational institutions with one or more of the following: Government-owned laboratories, private research organizations, non-profit institutions, or private firms;
 that is located in a region where the metal casting industry is concentrated;
- (2) "census region" means one of the four census regions (Northeast, South, Midwest, and West) that are designated as census regions by the Bureau of the Census;
- (3) "Department" means the Department of Energy;
- (4) "educational institution" means a degree granting institution;
- (5) "non-Federal source" means the United States metal casting industry, related industries, industry-related associations, individuals, organizations, universities, State agencies, or other entities supporting the metal casting industry;
- (6) "metal casting industry" or "industry" means the industries identified by codes numbered 3321, 3322, 3324, 3325, 3363, 3364, 3365, 3366, and 3369, in the Standard Industrial Classification manual published by the Office of Management and Budget in 1987;
- (7) "Secretary" means the Secretary of Energy.

SEC. 4. ESTABLISHMENT OF PROGRAM.

The Secretary, acting in accordance with authority provided in the Federal Non-Nuclear Research and Development Act of 1974 (42 U.S.C. 5901 et seq.), shall establish a Metal Casting Competitiveness Research Program (hereafter in this Act referred to as the "Program") for the purpose of performing and promoting the performance of research and development on issues related to the technology competitiveness and energy efficiency of the United States metal casting industry.

SEC. 5. OPERATION OF PROGRAM.

(a) SOLICITATION OF PROPOSALS.—Within one year after the date of enactment of this Act, the Secretary shall solicit and select proposals on a competitive basis from applicants to carry out the program under section 4. In order for a proposal to be considered by the Secretary, the applicant shall have in existence at the time the proposal is submitted the following qualifications:

- (1) the available space, support services, and technical capability to carry out research under the program;
- (2) a multidisciplinary research staff experienced in metal casting or other directly related technologies; and
- (3) the facilities and equipment capable of conducting testing or demonstration of metal casting or related processes.

(b) PROPOSAL CRITERIA.—Each proposal shall—

- (1) demonstrate the support of the metal casting industry by describing—
 - (A) how industry has participated in deciding what research activities will be undertaken;
 - (B) how industry will participate in the evaluation of the applicant's progress in research and development activities; and
 - (C) the extent to which industry funds are committed to the applicant's proposal.
- (2) demonstrate a commitment from non-Federal sources of a financial share not less than thirty-five per centum but no more than fifty per centum of the proposal's cost. For purposes of determining the non-Federal financial share, the fair market value of equipment, services, materials, technology transfer activities, and other assets directly related to the proposal's cost shall be included;
- (3) include a single or multiyear management plan that outlines how the research and development activities will be administered and carried out;
- (4) state the annual cost of the proposal and a breakdown of those costs; and
- (5) describe the technology transfer mechanisms the applicant will use to make available research results to industry and to other researchers.

(c) CONTENT OF MANAGEMENT PLAN.—The management plan set forth in subsection 5(b)(3) shall—

(1) outline the basic research and development activities expected to be performed;

(2) outline who will conduct those research activities;

(3) establish the time frame over which the research activities will take place; and

(4) define the overall program management and direction by—

(A) identifying managerial, organizational and administrative procedures and responsibilities;

(B) outlining how the coordination of research and development between the individuals and organizations involved will be achieved;

(C) providing how implementation and monitoring of the progress of research projects after receipt of funding from the Secretary will be achieved;

(D) providing how recommendations and implementations on modifications to the plan will be achieved; and

(E) providing sufficient rationale to support the plan's costs.

(d) **SELECTION OF PROPOSALS.**—From the proposals submitted, the Secretary shall select proposals for funding. The Secretary shall attempt to select at least four proposals. The Secretary shall select the proposals that—

(1) will best result in carrying out needed research and development in one or more of the following general areas—

(A) Environmental Technologies;

(B) Computer Modeling;

(C) Substitute Alloy Development;

(D) Net-Shape Casting;

(E) Gating Systems Design;

(F) Treatment, disposal and recycling technology of waste streams;

(G) Techniques and processes to improve energy efficiency in melting technology;

(H) Increased Yield Improvement;

(I) Melting and Pouring Research;

(J) Molding Processes Modernization;

(K) Die Cast and Foundry-Associated Metals Processing Technologies; and

(L) Other areas of research, which in the judgment of the Secretary after consulting with the Board established in section 7, further the purposes of this Act;

(2) represent research and development in specific areas identified in the "Metal Casting Research Priorities" developed annually by the Board pursuant to subsection 7(b)(1);

(3) to the greatest extent possible and subject to available appropriations, ensure that at least one applicant is selected from each of the four census regions of the country where the metal casting industry is concentrated;

(4) demonstrate strong industry support;

(5) ensure the timely transfer of technology to industry; and,

(6) otherwise best carry out the purposes of this Act.

(e) **FUNDING OF PROGRAM.**—From amounts made available in separate appropriation Acts, the Secretary shall provide to each applicant selected the financial and technical assistance and other incentives that are necessary and appropriate to carry out the purposes of this Act.

(f) **NATIONAL METAL CASTING RESEARCH INSTITUTE.**—Each recipient of financial assistance under subsection (d) shall be known as a "National Metal Casting Research Institute".

SEC. 6. REVIEW.

(a) **EVALUATION OF RESEARCH ACTIVITIES.**—The Secretary shall regularly monitor and evaluate the research activities of the applicants selected. After considering the reports of the Board provided for in subsection 7(b)(2), the Secretary shall determine whether each applicant selected has complied the management plan submitted in the original proposal and any modifications made since.

(b) **ANNUAL REPORT.**—Each selected applicant in the program shall provide an annual report to the Secretary that explains the progress made, compliance with the management plan, whether changes are needed and are being made to the management plan, and what new research is planned.

(c) **DISCONTINUATION OF FUNDING.**—In the event a selected applicant has substantially failed in the implementation of the management plan and research activities, the Secretary shall discontinue funding.

(d) **SOLICITATION OF NEW PROPOSALS.**—Upon completion of discontinuance of any research activity authorized in section 5, the Secretary shall, using available funds

appropriated pursuant to this Act, solicit new research proposals as set forth under the terms of this Act.

SEC. 7. INDUSTRIAL ADVISORY BOARD.

(a) **ESTABLISHMENT OF BOARD.**—Within sixty days after the date of the enactment of this Act the Secretary after consulting with representatives of trade and technical associations of the metal casting industry shall establish an Industrial Advisory Board (hereafter in this Act referred to as the "Board") to provide guidance and oversight in implementing the selection criteria and operation of the program. The Board shall be composed of nine members who are selected by the Secretary and who shall be individuals from the metal casting industry or individuals affiliated with industry contributors. At least one member of the Board shall be chosen from each of the four census regions of the country. Each Board member shall serve for a term not to exceed five years, but may be reappointed for successive terms.

(b) **REVIEW AND RECOMMENDATIONS.**—(1) Within one hundred eighty days after the date of the enactment of this Act and annually thereafter, the Board shall develop from the general research areas identified in section 5(d) and submit to the Secretary a list of Metal Casting Research Priorities. Such list shall, to the greatest extent possible, identify specific areas of research that would be considered of a priority nature to the United States metal casting industry.

(2) On an annual basis the Board shall—

(A) review the Secretary's solicitation and selection of research proposals and make recommendations as to how each such activity can be altered so as to better achieve the purposes of this Act; and

(B) review the research activities of each selected applicant, and the selected applicant's management plan, and report its findings and recommendations to the Secretary.

(c) **DURATION OF THE BOARD.**—The Board shall exist for the life of the Act.

SEC. 8. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Secretary for carrying out this Act \$20,000,000 for each of the fiscal years 1991, 1992, 1993, 1994, and 1995.

SEC. 9. PROTECTION OF PROPRIETARY RIGHTS.

Activities under this Act shall be subject to section 5 of the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988 (102 Stat. 4075)

SEC. 10. REPORTING.

The Secretary shall in each year's Departmental budget request to Congress provide a detailed review of the progress of the research and development activities authorized under this Act.

PURPOSE OF THE MEASURE

This measure is designed to promote university based research in metal casting technology by creating a Metal Casting Competitiveness Research Program within the Department of Energy. The measure contemplates joint Federal, private and university funded research projects. It is intended that greater research in metal casting technology will result in a more competitive metal casting industry.

BACKGROUND AND NEED

Background

The metal casting industry is composed of predominantly small owner-operated foundries. The foundries manufacture products called castings that are used in 90 percent of all manufactured goods. However, they are most often hidden as component parts.

The metal casting industry produces products with an annual value of more than \$25 billion. Examples of the products the industry manufactures include: aerospace rocket nozzles, manhole covers, jet engine parts, airplane propellers, wedding rings, battle tanks, door knobs, watch parts, car components, aircraft cabin

parts, radio antennas, disk drives, appliance parts, brake drums and rotors, compressor housings, rail car components, gears, and valves.

Though the metal casting industry is often viewed as having little need for new technology, the technology involved in making a metal casting is among the most complex used in any industrial manufacturing process. However, the basic concept is simple. The metal is melted, poured into a mold, and after it has solidified it is removed, refined or processed, and then delivered to the customer.

The process of making a metal casting involves a sophisticated understanding of physics, chemistry and mathematics. For example, the metal must be poured into a mold through a "gating system". The gating system is crucial to the success of the metal casting process. It also presents some of the most challenging technical problems of any discipline in the world today.

Gating system design involves the solution of equations governing three dimensional fluid flows under conditions where the basic properties of the fluids change because they are cooling. Supercomputers are required to obtain solutions that are accurate enough to be of any use to the researcher. Much more work is needed before such solutions are practical to the foundry.

Need

U.S. foundries once dominated the international market. In 1981, there were 4,400 foundries in the United States employing 400,000 production workers. Today, there are 3,700 foundries employing 216,000 workers. Since 1971, half of the U.S. foundries have closed. The total number of tons of metal casting the United States is producing has declined from 20 million tons in 1966 to 11 million tons today.

The metal casting industry is a foundation of the manufacturing economy. Metal casting is a high technology industry that requires access to strong research programs to survive. The present level of American metal casting research is inadequate. Metal casting research in many competing countries is supported by their governments. The U.S. metal casting industry needs a higher level of support if industry is to compete effectively in today's world market.

Testimony before Congressional committees has established that the primary reason for the downturn in the U.S. metal casting industry is vigorous foreign competition. American foundries are unable to effectively compete because foreign competitors use superior technology resulting in higher quality goods at lower prices.

Foreign competitors have benefited from large, centralized research programs. Countries who aggressively compete in the American casting market, such as Brazil, India, Korea and Germany, all operate internationally acclaimed, government-funded metal casting research centers for the specific purpose of making their foundries more competitive.

For example, the German Government funded research at the Foundry Institute of the Technical University of Aachen to develop a computer program to design the gating and feeding of castings. The program is so well developed and beneficial that it is now being marketed in Europe. Because the United States has no such

technology, it will soon be marketed in this country. The developers of the program are even offering to fund American professors to work on some minor improvements to the program.

Most every country with a metal casting industry invests in metal casting research. Canada, West Germany, Brazil, Italy, France, India, South Africa, Great Britain, Australia, Sweden, Spain, Japan, and Korea all heavily invest in national research programs. The United States contribution is minimal at best.

American foundries have great difficulty competing with foreign governments in developing comparable research programs. Ninety-four percent of American foundries employ less than 250 people. Most have total sales of less than \$100 million. The metal casting industry is highly capital and energy intensive.

Large outlays in equipment are needed for a foundry to operate. In addition, a significant amount of an American foundry's investment is required for pollution abatement and waste disposal. The vigorous competition among these small companies combined with high capital costs yield low profit margins. The low profit margins in turn severely limits any one individual company's ability to perform necessary research and development. So, industry has traditionally relied on universities for its researchers and research.

Universities have the responsibility to educate the engineers, chemists, metallurgists, technicians, and craftsmen. Yet, industry is faced with a shortage of trained workers because universities have been abandoning the field of metal casting over the last decade.

Because university research is expensive and funding limited, universities have been discouraging their faculty from working in this field. Schools that used to be foundry centers have dropped their programs for what some consider the more "fashionable technologies". Industries are seldom able to individually finance metal casting programs at universities.

Industry has been unable to fund any adequate American research programs. For example, 12 U.S. companies are paying almost \$200,000 annually to belong to SCRATA, a British research center on steel foundries because industry has found the U.S. Government to be a reluctant partner in metal casting research.

This is illustrated by the Department of Energy's Metals Initiative Program, established by the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988 (P.L. 100-680). The Act endeavors to improve the industrial competitiveness and energy efficiency of the American steel, aluminum, and copper industries. Pursuant to the Act, the Department of Energy has issued a research plan identifying areas of opportunity for casting research. The Act requires the metals industry to identify meritorious projects and submit proposals to the Department for funding consideration. The Department testified that 21 industries submitted 23 proposals for metal casting technology development. However, the Department selected only two of those proposals for a total financial assistance in 1989 of \$500,000.

In testimony before the Committee, the Department of Energy supported more metal casting research, particularly because such research contributes to energy efficiency. The metal casting industry consumes over 250 trillion Btu's of energy annually.

The Department further testified that the best research is accomplished through focused efforts. These efforts should be carried out by a group that is able to perform the research and also able to implement research results. For example, the Department would support an academic institution collaborating with industry to form a consortium to perform specific research leading to a specific objective.

The Committee believes that the most effective way to transfer technology to industry in this circumstance is to involve industry directly in the performance of research and development under cost-shared agreements. Under these agreements, industry effectively becomes committed to the technology at the outset of the research effort.

This legislation creates a focused research and development program aimed primarily at educational institutions that can demonstrate substantial industry involvement. The legislation intends to place American foundries on an equal footing with the government subsidized foreign foundries who compete directly against them.

The Committee believes that the investment that this legislation makes in the metal casting industry will be repaid many times over. Better metal casting technology will reduce energy consumption, lower costs and improve the quality of castings. The lower cost castings will lead to lower cost finished goods. This specifically makes the American metal casting industry more competitive and, thus, American industry as a whole more competitive.

LEGISLATIVE HISTORY

Senator Shelby introduced S. 775 on April 13, 1989. It was referred to the Committee on Energy and Natural Resources. On September 21, 1989, the Subcommittee on Energy Research and Development held a hearing on the bill. At this time Senators Heflin, Kohl, McConnell, Heinz, Kasten and Lugar are cosponsors.

A virtually identical bill, H.R. 1243, was introduced in the House of Representatives on March 2, 1989, by Representative Ben Erdreich (D-AL). The bill was referred to the House Committee on Science, Space, and Technology. On July 18, 1989, the Subcommittee on Energy Research and Development held a hearing on the bill. On February 21, 1990, the full House Committee ordered the bill favorably reported with an amendment in the nature of a substitute. On March 6, 1990, the bill was called up by the House under suspension of the rules, and then passed by a vote of 382 to 27.

On March 7, 1990, H.R. 1243 was received in the Senate and erroneously referred to the Committee on Commerce, Science, and Transportation. On March 20, 1990, by unanimous consent, the Committee on Commerce, Science, and Transportation was discharged, and the Act was then referred to the Committee on Energy and Natural Resources.

At a business session on March 8, 1990, the Committee ordered H.R. 1243 favorably reported with an amendment in the nature of a substitute.

COMMITTEE RECOMMENDATION AND TABULATION OF VOTES

The Senate Committee on Energy and Natural Resources, in open business session on March 8, 1990, by unanimous vote of a quorum present recommends that the Senate pass H.R. 1243, if amended as described herein.

The rollcall vote on reporting the measure was 18 yeas, 0 nays, as follows:

YEAS	NAYS
Mr. Johnston	
Mr. Bumpers*	
Mr. Ford*	
Mr. Metzenbaum*	
Mr. Bradley	
Mr. Bingaman*	
Mr. Wirth	
Mr. Conrad	
Mr. Heflin	
Mr. Rockefeller	
Mr. McClure	
Mr. Hatfield	
Mr. Domenici*	
Mr. Wallop*	
Mr. Murkowski	
Mr. Nickles*	
Mr. Burns	
Mr. Garn	
Mr. McConnell*	

*Indicates vote by proxy.

COMMITTEE AMENDMENTS

The Committee adopted an amendment in the nature of a substitute to H.R. 1243. The substitute represents the Committee's attempt to clearly articulate how the Metal Casting Competitiveness Program is to operate within the Department of Energy.

H.R. 1243 as introduced would have required the Secretary of Energy to establish three metal casting research centers. The bill gave little guidance as to how the centers were to be selected and how they were to operate. The substitute establishes a framework within which the Secretary and program participants must work. At the same time, the program is sufficiently flexible to allow the Secretary and project participants to determine exactly how the research activities will be carried out.

The Secretary is to solicit and select proposals on a competitive basis. In order for a proposal to be considered, it must be submitted by a qualified applicant. An applicant is defined as an educational institution or a consortium of educational institutions along with government-owned laboratories, private research organizations, non-profit institutions, or private firms.

Each applicant must already have in place at the time the proposal is submitted the necessary equipment, facilities and research-

ers to carry out research under this program. It is not the intent for new research facilities to be paid for out of funds obtained under this program. However, existing assets may be counted toward the applicant's non-Federal cost sharing requirement.

The proposal must include a commitment from non-Federal sources to share between 35 to 50 percent of the proposal's cost. "Non-Federal" source means the metal casting industry and other entities supporting the metal casting industry. While it is envisioned that it will primarily be industry itself providing the non-Federal share, a State or university could agree to provide some of the funds, or other allowable assets.

Industry also has a formal role to perform in this program. The amendment creates an Industrial Advisory Board. The Board has two functions, first, to provide guidance and oversight to the Secretary in carrying out the program, and, second, the Board is to identify specific areas of research that would receive priority in funding under the Act. The Secretary is to select proposals that will result in research in those areas identified by the Board.

The Board is to select specific research projects from the general areas of research identified in the amendment. These areas were identified for two reasons. First, by identifying general areas of research it is clearer what is meant by "metal casting research". Second, the Committee determined that these areas are of a priority nature for industry. So as to allow new research areas that have not been identified by the amendment, the Secretary may identify other areas of research after consulting with the Board.

The substitute gives great flexibility in the kinds of proposals that may be submitted. It is up to those submitting the proposal to decide how the research activities will be carried out.

For example, an educational institution could submit a proposal for one research project, or it could submit a proposal to carry out a large number of research projects over several years. A group of educational institutions along with other research organizations could likewise submit a proposal to carry out single or multi-year research projects. There is no prohibition on participants from being involved in more than one proposal.

Upon receipt by the Secretary of the proposals, those which will result in the best research activities are to be selected using the mandated criteria. The extent to which funding is available will obviously have an impact on the Secretary's ability to select the best proposals. Ideally, the Secretary will select proposals that will perform research in a number of different areas, and are multi-year in scope. However, in order to allow the Secretary the flexibility to create a program that will result in the best needed research, nothing prohibits the Secretary from funding only portions of submitted proposals.

The amendment contemplates a multi-year research program. The Secretary is to maintain a Metal Casting Competitiveness Program as long as authority to do so exists. When all of the research activities under a selected proposal have been completed or are discontinued, the Secretary is to solicit and select new proposals.

An important goal of this program is to ensure that research activities that will benefit industry are performed. Likewise, the transfer of technology to industry is an essential part of this pro-

gram. To accomplish this, the Committee intends that industry have a major role in the program. To give industry a major role, the amendment utilizes several different mechanisms.

Each proposal is required to describe the level of industry support for the proposal. The Secretary is similarly required to select proposals that have demonstrated strong industry support. The type of industry support each proposal must have, however, is not specified. The support may be one company, several companies, an industry trade association, or any combination thereof, agreeing to share in the cost of the proposal. Obviously, if industry agrees to pay for half of the costs associated with the proposal, industry desires those research activities to be carried out. However, money is not the only kind of industry support contemplated by the amendment.

Industry may offer to provide engineers or researchers, or industry may provide technical advice on the applicant's research activities. Industry might also agree to help disseminate the results of the research activities. Any activity by industry that demonstrates support is a relevant factor.

In addition to having industry support, each proposal is required to demonstrate how the results of its research will be transferred to industry. The Secretary is also required to select the proposals that will result in technology transfer. An example of a technology transfer activity is presentation and publication of technical results in a form and manner useful to industry. To promote these activities, the amendment allows technology transfer activities to be counted toward the applicant's cost sharing requirement.

By requiring that each applicant obtain industry commitment and to describe its technology transfer activities at the time the proposal is submitted, the applicants are forced to work with industry to decide what research activities are needed and how to carry them out. Industry will be involved from the very beginning and throughout the life of the research activities carried out under this program. Only with appropriate and regular input from industry to the research investigator will practical research be done that will be beneficial.

To further promote industry involvement and to protect industry trade secrets, the amendment includes the intellectual property protection provision enacted under the Steel and Aluminum Conservation Act of 1988. This provision requires that title to all intellectual property developed under the program be transferred to a holding company.

Participants in the program will receive a paid-up, royalty-free license from the holding company. However, the holding company is required to make licenses available on reasonable terms to all companies that do not participate in the projects. This method of handling intellectual property is intended to serve the dual purpose of facilitating technology transfer, and providing benefits and protection to project participants.

To further promote technology transfer activities, the amendment intends that the Secretary will select applicants from different geographic regions where the metal casting industry is concentrated. If possible, the Secretary will select applicants from each of the four census regions as designated by the Bureau of the Census.

The program is intended to be flexible but responsive to the metal casting industry. Should the metal casting industry choose not to provide support to submitted proposals, then the Secretary is not required to fund any research. The more support the metal castings industry offers, the more research activities the Secretary may fund.

SECTION-BY-SECTION ANALYSIS

Section 1. Is the enacting clause.

Section 2. Establishes the findings of the Congress. The metal castings industry is important to the national security and economic well being of the country. A technically advanced metal castings industry is essential to the competitiveness of many American industries. Many metal casting industries lack the resources to conduct metal casting research by themselves. The support of university based research by the Federal Government will promote technology development and help train new engineers for the metal castings industry.

Section 3. Contains definitions of terms used in the bill.

Section 4. Establishes a Metal Casting Competitiveness Research Program within the Department of Energy.

Section 5. Establishes how the program will operate. Under subsection (a), The Secretary of Energy is required to solicit proposals on a competitive basis to conduct metal casting research. Only an educational institution or consortium of private, nonprofit or government organizations along with an educational institution may be selected. In addition, the applicant must already have the research facilities in place to apply.

Subsections (b) and (c) requires each proposal to meet certain criteria. Each proposal must demonstrate industry support, contain a cost sharing commitment, set out a management plan, state the cost of the proposal and state how technology will be transferred to industry.

Subsection (d) requires the Secretary to use certain criteria in selecting from the proposals. The stated criteria are intended to ensure that research activities needed by the metal casting industry are selected. The research is to take place in areas of the country where the metal casting industry is concentrated so as to promote technology transfer.

Section 6. Requires the Secretary to annually review the progress of the research proposals selected, and to discontinue funding to any applicant selected that substantially fails in its research activities. The Secretary is to solicit new proposals when research activities under the proposals are discontinued.

Section 7. Creates an Industrial Advisory Board. The Board is to provide guidance and oversight to the Secretary in carrying out the program. The Board is also required to identify specific areas of research on a priority basis which the Secretary is to use in selecting from the proposals.

Section 8. Is an authorization of appropriations of \$20 million per year for 5 years.

Section 9. Is an intellectual property protection provision. It adopts the procedure used under the Steel and Aluminum Conser-

vation Act of 1988. This requires that title to all intellectual property is transferred to a holding company. Participants in the program will receive a paid-up, royalty-free license from the holding company. The holding company is required to make licenses available on reasonable terms to all companies that do not participate in the projects.

Section 10. Requires the Secretary to report the progress of the program in each year's Departmental budget request to Congress.

COST AND BUDGETARY CONSIDERATIONS

The following estimate of the cost of this measure has been provided by the Congressional Budget Office.

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, March 12, 1990.

Hon. J. BENNETT JOHNSTON, Jr.,
Chairman, Committee on Energy and Natural Resources,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the attached cost estimate for S. 775, a bill to require the Secretary of Energy to establish Centers for Metal Casting Competitiveness Research.

If you wish further details on this estimate, we will be pleased to provide them.

Sincerely,

ROBERT D. REISCHAUER,
Director.

CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE

1. Bill number: S. 775.
2. Bill title: A bill to require the Secretary of Energy to establish Centers for Metal Casting Competitiveness Research.
3. Bill status: As ordered reported by the Senate Committee on Energy and Natural Resources, March 8, 1990.
4. Bill purpose: The bill would require the Secretary of Energy to establish, as part of the department's energy conservation program, at least four centers for metal casting research at major educational institutions. To the extent possible, the Secretary would select at least one applicant from each of the four census regions where the metal casting industry is concentrated.
- S. 775 would also require the Secretary of Energy to establish an industrial advisory board to provide guidance and oversight for the metal casting research centers. The board would review research proposals and activities, and would submit an annual report of its findings and recommendations to the Secretary.
5. Estimated cost to the Federal Government:

[By fiscal year, in millions of dollars]

	1991	1992	1993	1994	1995
Authorization level.....	20	20	20	20	20
Estimated outlays.....	5	16	19	20	20

The costs of this bill fall within budget function 270.

Basis of estimate: The bill authorizes \$20 million per year for 1991 through 1995 for establishing and operating the centers. For the purpose of this estimate, CBO assumes that all amounts authorized will be appropriated and that spending will occur at historical rates for similar energy conservation programs.

6. Estimated cost to State and local governments: None.

7. Estimate comparison: None.

8. Previous CBO estimate: On February 28, 1990, CBO prepared a cost estimate on H.R. 1243, as ordered reported by the House Committee on Science, Space, and Technology. The House bill authorizes \$5 million per year for three years, 1991 through 1993. Spending for H.R. 1243 would be from appropriations that were previously authorized by the Renewable Energy and Energy Technology Act of 1989.

9. Estimate prepared by: Pete Fontaine.

10. Estimate approved by: C.G. Nuckols for James L. Blum, Assistant Director for Budget Analysis.

REGULATORY IMPACT EVALUATION

In compliance with paragraph 11(b) of Rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact which would be incurred in carrying out H.R. 1243.

The Act is not a regulatory measure in the sense of imposing government-established standards or significant economic responsibilities on private individuals and businesses. The Act contains authorizations for a research and development program within the Department of Energy and directives to the Secretary of Energy with respect to the operation of the program. Any involvement of private firms and individuals in the research and development program is voluntary.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy from the Act.

Little, if any, additional paperwork would result from the enactment of H.R. 1243, as reported.

EXECUTIVE COMMUNICATIONS

On July 24, 1989, the Committee on Energy and Natural Resources requested legislative reports from the Department of Energy and the Office of Management and Budget setting forth executive views on S. 775. These reports had not been received at the time the report on H.R. 1243 was filed. When the reports become available, the Chairman will request that they be printed in the Congressional Record for the advice of the Senate.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the Committee notes that no changes in existing law are made by H.R. 1243.

